Algebra 1
Standards-based Skills Worksheet

Student: William **Date:** 5-11-11

Completed by (name) Rita Position Case manager

School Division: Providence City

1. Review SOL strand for	2. Review data on student performance and indicate all data sources analyzed to assess performance in this strand:
EXPRESSIONS AND OPERATIONS **STANDARD A.1** **STANDARD A.2** **STANDARD A.3**	☑ Present Level of Performance (PLOP) ☑ Prior SOL data ☑ Standardized test data ☑ Classroom assessments ☐ Teacher observations

3. Check the areas that will require specially designed instruction critical to meeting the standard.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Translate verbal quantitative situations into algebraic expressions and vice versa.
- ☐ Model real-world situations with algebraic expressions in a variety of representations (concrete, pictorial, symbolic, verbal).
- ☐ Evaluate algebraic expressions for a given replacement set to include rational numbers.
- ☐ Evaluate expressions that contain absolute value, square roots, and cube roots.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Simplify monomial expressions and ratios of monomial expressions in which the exponents are integers, using the laws of exponents.
- ☐ Model sums, differences, products, and quotients of polynomials with concrete objects and their related pictorial representations.
- ☐ Relate concrete and pictorial manipulations that model polynomial operations to their corresponding symbolic representations.
- ☐ Find sums and differences of polynomials.
- ☐ Find products of polynomials. The factors will have no more than five total terms (i.e. $(4x+2)(3x+5)$ represents four terms and $(x+1)(2x^2+x+3)$ represents five terms).
- ☐ Find the quotient of polynomials, using a monomial or binomial divisor, or a completely factored divisor.
- ☐ Factor completely first- and second-degree polynomials with integral coefficients.
- ☐ Identify prime polynomials.
- ☐ Use the x-intercepts from the graphical representation of the polynomial to determine and confirm its factors.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and

representations to

- ☐ Express square roots of a whole number in simplest form.
- ☐ Express the cube root of a whole number in simplest form.
- ☐ Express the principal square root of a monomial algebraic expression in simplest form where variables are assumed to have positive values.

4. Is/Are standard-based goal(s) needed?	☐ **NO Check one or more justifications:**
☐ **YES** Address areas of need in PLOP	☐ Accommodations Available (specify): ☐ Area of Strength in PLOP ☑ New Content ☐ Other (Specify):

5. Notes Supporting Data Analysis

1. Review SOL strand for **EQUATIONS AND INEQUALITIES STANDARD A.4-6**	**2. Review data on student performance** and indicate all data sources analyzed to assess performance in this strand: ☑ Present Level of Performance (PLOP) ☐ Prior SOL data ☑ Standardized test data ☐ Classroom assessments ☐ Teacher observations

3. Check the areas that will require specially designed instruction critical to meeting the standard.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Solve a literal equation (formula) for a specified variable.
- ☐ Simplify expressions and solve equations, using the field properties of the real numbers and properties of equality to justify simplification and solution.
- ☐ Solve quadratic equations.
- ☐ Identify the roots or zeros of a quadratic function over the real number system as the solution(s) to the quadratic equation that is formed by setting the given quadratic expression equal to zero.
- ☑ Solve multistep linear equations in one variable.
- ☐ Confirm algebraic solutions to linear and quadratic equations, using a graphing calculator.
- ☐ Given a system of two linear equations in two variables that has a unique solution, solve the system by substitution or elimination to find the ordered pair which satisfies both equations.
- ☐ Given a system of two linear equations in two variables that has a unique solution, solve the system graphically by identifying the point of intersection.
- ☐ Determine whether a system of two linear equations has one solution, no solution, or infinite solutions.
- ☐ Write a system of two linear equations that models a real-world situation.
- ☐ Interpret and determine the reasonableness of the algebraic or graphical solution of a system of two linear equations that models a real-world situation.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☑ Solve multistep linear inequalities in one variable.
- ☐ Justify steps used in solving inequalities, using axioms of inequality and properties of order that are valid for the set of real numbers.
- ☐ Solve real-world problems involving inequalities.
- ☐ Solve systems of linear inequalities algebraically and graphically.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Graph linear equations and inequalities in two variables, including those that arise from a variety of real-world situations.

- ☐ Use the parent function $y = x$ and describe transformations defined by changes in the slope or y-intercept.
- ☐ Find the slope of the line, given the equation of a linear function.
- ☐ Find the slope of a line, given the coordinates of two points on the line.
- ☐ Find the slope of a line, given the graph of a line.
- ☐ Recognize and describe a line with a slope that is positive, negative, zero, or undefined.
- ☐ Use transformational graphing to investigate effects of changes in equation parameters on the graph of the equation.
- ☐ Write an equation of a line when given the graph of a line.
- ☐ Write an equation of a line when given two points on the line whose coordinates are integers.
- ☐ Write an equation of a line when given the slope and a point on the line whose coordinates are integers.
- ☐ Write an equation of a vertical line as $x = a$.
- ☐ Write the equation of a horizontal line as $y = c$.

4. Is/Are standard-based goal(s) needed?	☐ **NO** Check one or more justifications:
☐ **YES** Address areas of need in PLOP	☑ Accommodations Available (specify): ☑ Area of Strength in PLOP ☑ New Content ☐ Other (Specify):

5. Notes Supporting Data Analysis

① William evidence a weakness in solving multi-step problems as reported within the previous SOL assessment results. Two items required a multi-step solution.
② William will also require the read aloud option for word problems due to his weakness in reading grade level text.

1. Review SOL strand for	**2. Review data on student performance** and indicate all data sources analyzed to assess performance in this strand:
FUNCTIONS **STANDARD A.7, A.8**	☑ Present Level of Performance (PLOP) ☑ Prior SOL data ☑ Standardized test data ☑ Classroom assessments ☑ Teacher observations

3. Check the areas that will require specially designed instruction critical to meeting the standard.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Determine whether a relation, represented by a set of ordered pairs, a table, or a graph is a function.
- ☐ Identify the domain, range, zeros, and intercepts of a function presented algebraically or graphically.
- ☐ For each x in the domain of f, find $f(x)$.
- ☐ Represent relations and functions using concrete, verbal, numeric, graphic, and algebraic forms. Given one representation, students will be able to represent the relation in another form.
- ☐ Detect patterns in data and represent arithmetic and geometric patterns algebraically.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Given a situation, including a real-world situation, determine whether a direct variation exists.
- ☐ Given a situation, including a real-world situation, determine whether an inverse variation exists.
- ☐ Write an equation for a direct variation, given a set of data.
- ☐ Write an equation for an inverse variation, given a set of data.
- ☐ Graph an equation representing a direct variation, given a set of data.

4. Is/Are standard-based goal(s) needed?	☐ **NO Check one or more justifications:**
☐ **YES** Address areas of need in PLOP	☐ Accommodations Available (specify): ☐ Area of Strength in PLOP ☑ New Content ☐ Other (Specify):

5. Notes Supporting Data Analysis

1. Review SOL strand for	**2. Review data on student performance** and indicate all data sources analyzed to assess performance in this strand:
STATISTICS **STANDARD A.9** **STANDARD A.10** **STANDARD A.11**	☑ Present Level of Performance (PLOP) ☑ Prior SOL data ☑ Standardized test data ☑ Classroom assessments ☑ Teacher observations

3. Check the areas that will require specially designed instruction critical to meeting the standard.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Analyze descriptive statistics to determine the implications for the real-world situations from which the data derive.
- ☐ Given data, including data in a real-world context, calculate and interpret the mean absolute deviation of a data set.
- ☐ Given data, including data in a real-world context, calculate variance and standard deviation of a data set and interpret the standard deviation.
- ☐ Given data, including data in a real-world context, calculate and interpret z-scores for a data set.
- ☐ Explain ways in which standard deviation addresses dispersion by examining the formula for standard deviation.
- ☐ Compare and contrast mean absolute deviation and standard deviation in a real-world context.

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Compare, contrast, and analyze data, including data from real-world situations displayed in box-and-whisker plots. use charts

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- ☐ Write an equation for a curve of best fit, given a set of no more than twenty data points in a table, a graph, or real-world situation.
- ☐ Make predictions about unknown outcomes, using the equation of the curve of best fit.
- ☐ Design experiments and collect data to address specific, real-world questions.
- ☐ Evaluate the reasonableness of a mathematical model of a real-world situation.

4. Is/Are standard-based goal(s) needed?	☐ **NO** **Check one or more justifications:**
☐ **YES** Address areas of need in PLOP	☑ Accommodations Available (specify): ☐ Area of Strength in PLOP ☐ New Content ☐ Other (Specify):

5. Notes Supporting Data Analysis

William will use charts to address organization of problem solving tasks.